MOORE INDUSTRIES WORLDWIDE

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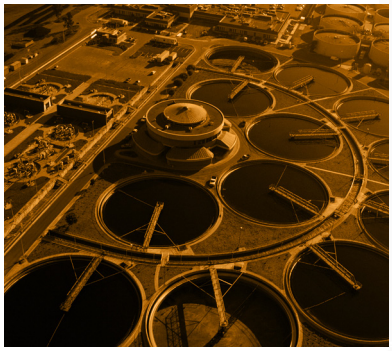
SRM Safety Relay Module



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SRM

Safety Relay Module

FS FUNCTIONAL SAFETY SERIES

User's Manual

225-765-00E
February 2015

www.miinet.com

Customer Support

MOORE INDUSTRIES WORLDWIDE

Demand Moore Reliability

Customer Support

Moore Industries is recognized as the industry leader in delivering top quality to its customers in products and services. We perform a sequence of stringent quality assurance checks on every unit we ship. If any Moore Industries product fails to perform up to rated specifications, call us for help. Our highly skilled staff of trained technicians and engineers pride themselves on their ability to provide timely, accurate, and practical answers to your process instrumentation questions. Our headquarters and other facilities phone numbers are listed below.

There are several pieces of information that can be gathered before you call the factory that will help our staff get the answers you need in the shortest time possible. For fastest service, gather the complete model and serial number(s) of the problem unit(s) and the job number of the original sale.

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Safety Messages

Please read this manual in its entirety. It should answer most of your questions. For personal and system safety, and for optimum product performance, make sure you thoroughly understand the contents before installing, using, or maintaining this product. Should you still have questions please visit our web site at www.miinet.com or contact any of our sales/support offices nearest you.

Your safety and the safety of others is very important. We have provided many important safety messages in this manual. Please read these messages carefully. These safety messages alert you to potential hazards that could hurt you or others or render damage to units.

All Moore Industries instrumentation should only be used for the purpose and in the manner described in this manual. If you use this product in a manner other than that for which it was intended, unpredictable behavior could ensue with possible hazardous consequences.

Each safety message is associated with a safety alert symbol. These symbols are found in the throughout the manual. The definition of these symbols is described below:

Pay particular attention wherever you see the following symbols:

Note – Information that is helpful for a procedure, condition or operation of the unit.

Caution – Hazardous procedure or condition that could damage or destroy the unit.

Warning – Hazardous procedure or condition that could injure the operator.

Qualified Personnel

The Moore Industries' product/systems described in this manual may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these Moore Industries' products/systems.

Proper use of Moore Industries products

Moore Industries' products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Moore Industries' . Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

We have reviewed the contents of this publication to ensure consistency with the hardware and/or software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions. Specifications and information are subject to change without notice.

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FS FUNCTIONAL SAFETY SERIES

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FS FUNCTIONAL SAFETY SERIES

SECTION 1

Section 1 - Introduction

The Moore Industries' Safety Relay Module (SRM) is part of Moore Industries' **FS FUNCTIONAL SAFETY SERIES** products. The SIL 2 certified SRM is designed and manufactured to provide a high level of availability for safety critical applications and for use as a component part of a safety instrumented system.

This manual contains information needed to install, operate and maintain this product. When the SRM is used in a SIL rated safety application, please refer to the Safety Instrumented Systems section of this manual. Safety and failure rate data for the SRM is contained in the SRM FMEDA report (Moore Industries' Document No: 700-702-35), and is available upon request.

Description

The SRM is a relay repeater model that accepts a single contact closure input from a logic solver trip output such as the Moore Industries STA Safety Trip Alarm or the SPA2 Programmable Limit Alarm Trip. The SRM provides three contacts per alarm input, allowing you to add alarm contacts for your safety processes without special installation or configuration.

Relay Terminology

Normal is the term used to describe the "shelf-state" of relay contacts. The contacts of a ***Normally Open*** relay are open (infinite resistance) when the relay is not energized. The contacts of a ***Normally Closed*** relay are open when the relay is energized (closed when not energized).

Note: *Sometimes a non-alarm input level is referred to as being in a "normal" condition. This practice is intentionally avoided in this manual. Do not confuse the term "normal", as in Normally Open or Normally Closed, with a non-alarm input condition. In this manual, "normal" is an exclusive reference to the shelf state or quiescent state of an alarm's relay contacts, whether open or closed.*

SRM Applications

Please refer to ***Section 5: Applications*** for examples of typical SRM applications

Model Numbers and Options

The following section provides details of the Moore Industries model number and the available options for the SRM.

Moore Industries model numbers for SRM are structured as follows:

SRM / CC / 3RO / 24DC / [DIN]

Unit / Input / Output / Power / - Options [Housing]

Refer to ***Section 8 Ordering Information*** for a quick reference table of ordering information.

SRM Safety Relay Module

INPUTS

CC (Contact Closure)

When the input to the SRM is open there will be 24Vdc present at the input terminals. When the input to the SRM is closed there will be a maximum of 55mA flowing through the closed circuit.

Note: *The SRM's CC (Contact Closure) input circuit includes an internal snubbing diode across it's relay coil which means there is no need for any external suppression across the input terminals.*

OUTPUTS

3RO (3 Relay Outputs)

There are 3 sets of fuse-protected, normally open relay contacts. These are rated 250Vac/30Vdc, 5A (resistive).

Note: *There is also one additional set of fuse-protected, normally closed relay contacts (Monitor Contacts) used for diagnostics. These are rated 250Vac/30Vdc, 1A (resistive).*

POWER

24DC

The required power is 24Vdc, -5% to +10%. Power consumption is 1.5W typical, 2.3W maximum.

OPTIONS

There are no options available at this time.

HOUSING

[DIN]

Universal DIN-style housing mounts on a 32mm G-type rail (EN 50035) or on 35mm Top Hat rail (EN50022).

SECTION 2

Section 2 - Calibration Bench Check

We highly recommend that you perform a bench check of the SRM prior to installing it in the field. Doing this will ensure that it is operating within your expectations or requirements.

Calibration

The SRM does not require calibration.

Bench Check Procedure

Setup unit using Figures 2.1 and 2.2 and equipment in table 2.1.

1. Apply 24Vdc power to the SRM (with no other Inputs or Outputs connected) and verify the status of the LEDs.

   Power = Green
   Input = Red
   Output = Red

   Also, using the ohmmeter, verify the status of the SRM outputs:

   Output Terminals

   - Normally Open 1 to Common 1
     NO1-to-CM1 = Open
   - Normally Open 2 to Common 2
     NO2-to-CM2 = Open
   - Normally Open 3 to Common 3
     NO3-to-CM3 = Open

   Monitor Terminals

   - Normally Closed 4 to Common 4
     NC4-to-CM4 = Less than 1 ohm

2. Connect the 20 ohm resistor across the two Input terminals. Note: The reason for using the 20 ohm resistor is to simulate worn or dirty contacts at the Input.
   Verify the status of the LEDs.

   Power = Green
   Input = Green
   Output = Green

   Also, using the ohmmeter, verify the status of the SRM outputs:

   Output Terminals

   - Normally Open 1 to Common 1
     NO1-to-CM1 = Less than 1 ohm
   - Normally Open 2 to Common 2
     NO2-to-CM2 = Less than 1 ohm
   - Normally Open 3 to Common 3
     NO3-to-CM3 = Less than 1 ohm

   Monitor Terminals

   - Normally Closed 4 to Common 4
     NC4-to-CM4 = Open

Table 2.1. Bench Check Equipment for the SRM.

Device	Specifications
Power Supply	Calibrated, regulated 24Vdc (±10%) source, nominal, for SRM
Load Resistor	20 ohm 1/4W resistor
Ohmmeter	Calibrated to an accuracy of ±0.5%

All referenced product names are the sole property of their respective manufacturers.

Figure 2.1. SRM Front Panel LEDs

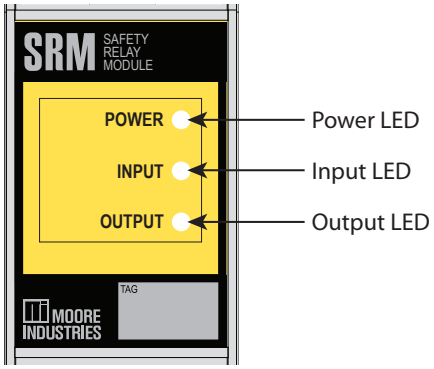
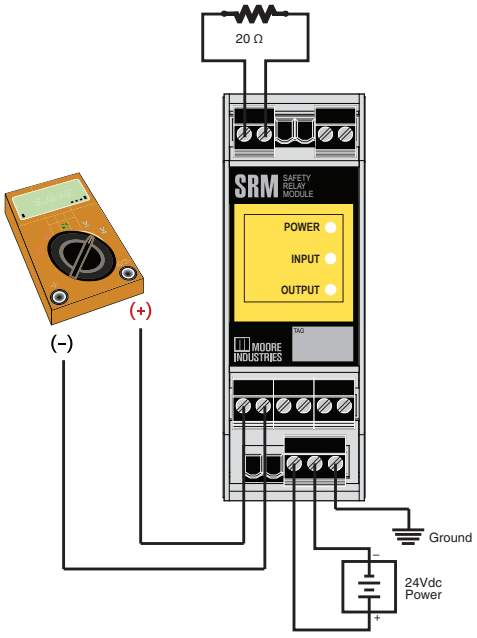


Figure 2.2. Bench Check Set-up



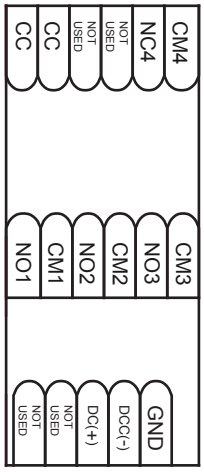
Section 3 - Installation and Wiring

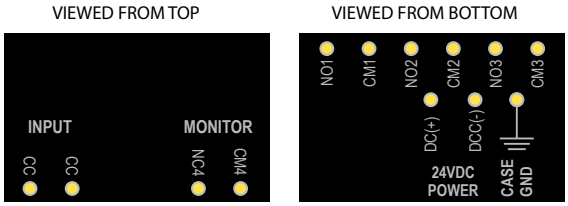
Instructions in this section and others may require special precautions to ensure the safety of the personnel performing the operations. Notes, Cautions and Warnings that may cause potential safety issues are indicated throughout this manual by symbols, please refer to Page 3 of this manual to view and familiarize yourself with these safety message symbols.

Note: *Make sure to bench check the instruments prior to installation. Also, install all instruments in their intended application and on their rail before making any electrical connections. Allow enough room for pivoting instruments vertically on the rail for removal in applications involving multiple banks of SRM.*

Terminal Designations

Figure 3.1. *Terminal Designations*





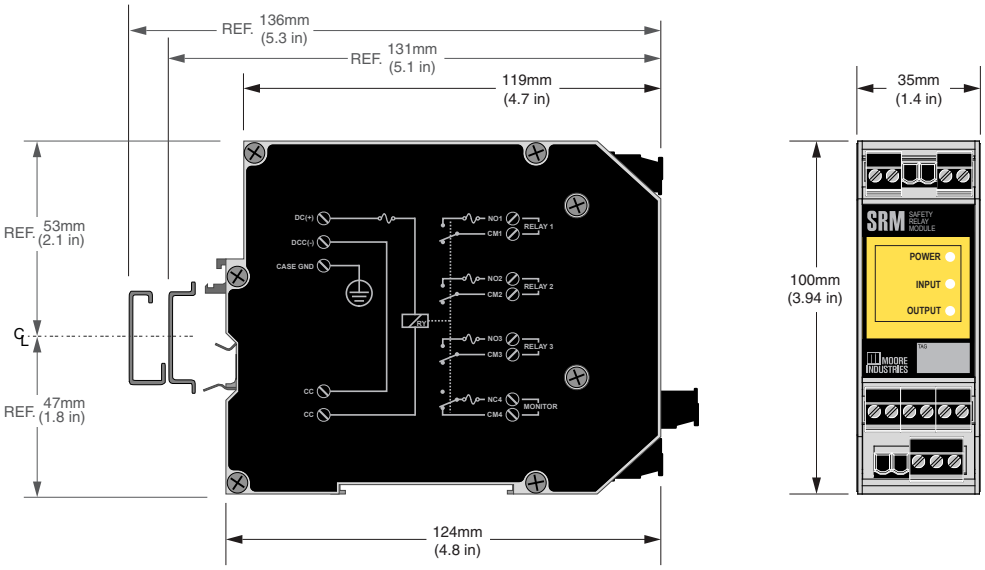
KEY:

DC = Power Input (+)	NO = Normally Open
DCC = Power Input (-)	NC = Normally Closed
CM = Relay Common	
GND = Ground	

NOTES:
1. Terminal blocks can accommodate 14-22 AWG solid wiring.

Dimensions

Figure 1. *The SRM Dimensions*



Mounting

The SRM is housed in a "universal" DIN case that can be mounted on both 32mm G-type (EN50035) and 35mm Top-Hat (EN50022) DIN-rail. To mount the SRM on a Top-Hat DIN-rail, seat the upper extrusion on the unit back panel over the top lip of the rail and pivot downward until the housing locks into place. To mount the unit on a G-type rail, seat the extrusion under the top lip of the rail and again, pivot downward.

When mounting multiple units, like a rack or cabinet, make sure to allow adequate vertical spacing for pivoting the units.

SECTION 3

Electrical Connections

When installing any Moore Industries product, always follow all local regulations and standards for grounding, shielding, and safety. Refer to Figure 3.1 for Terminal Designations. Use +90°C suitable wiring for all connections

Warning: *Terminals on this unit may be connected to hazardous voltages. Before making ANY connections to this unit, always remove power from the loop or instrument power terminals.*

Installation Category

All terminals are rated CAT I.
Environmental rating = Pollution Degree 2.
Relay contacts are intended for connection to over voltage Category II mains sources.

Equipment Ratings

The SRM accepts a contact closure input and switches outputs up to 5A at up to 240 Vac or 30 Vdc. It does not generate hazardous voltages but may switch hazardous voltages (>50Vac) on its output contacts. Products connected to the SRM should be designed to receive this type of input.

Warning: *If this unit is used in a manner not specified by Moore Industries, the protection provided by the equipment may be impaired.*

24Vdc Supply Wiring

All power connections should be made with 14 or 20 AWG (2.0mm^2 or 0.52mm^2) wire.

The end of each conductor should be stripped no more than 0.25in (7mm). The end of the stripped wire should be tinned with solder, or inserted into a ferrule and crimped before being placed into a terminal block.

Tighten the screws on the terminal block to 4.4 - 5.3 lbf·in (0.5 - 0.6 N·m).

Input/Output Wiring

The Input/Output connections can be made with 14 to 22 AWG (2.0mm^2 or 0.33mm^2) wire.

If high voltage/currents are being switched on the relay contacts then 14 or 16 AWG (2mm^2 or 1.3mm^2) wire is recommended.

The end of each conductor should be stripped no more than 0.25in (7mm).

Tighten the screws on the terminal block to 4.4 - 5.3 lbf·in (0.5 - 0.6 N·m).

Protective Earth Conductor

The Protective Earth Conductor shall be of equal or larger size wire than the other two power conductors.

The Protective Earth Conductor shall be the first conductor connected to the unit when the unit is being wired. It shall be the last conductor removed when the unit is being un-wired.

Recommended Ground Wiring Practices

Moore Industries recommends the following ground wiring practices:

- Any Moore Industries product in a metal case or housing should be grounded.
- The protective earth conductor must be connected to a system safety earth ground before making other connections.
- All input signals to, and output signals from, Moore Industries' products should be wired using a shielded, twisted pair wiring technique. Shields should be connected to an earth or safety ground.
- For the best shielding, the shield should be run all the way from the signal source to the receiving device. (see Note below)
- The maximum length of un-shielded input and output signal wiring should be 2 inches.

Note: *Some of Moore Industries' instruments can be classified as receivers (IPT2, IPX2, etc.) and some can be classified as transmitters (TRX, TRY, etc.) while some are both a receiver and a transmitter (SPA2, HIM, etc). Hence, your shield ground connections should be appropriate for the type of signal line being shielded. The shield should be grounded at the receiver and not at the signal source.*

Contact/Load Protection

The supply powering the contact/load shall be protected by a UL approved branch circuit fuse or breaker, rated 250 Vac, 10 Amp.

Contact/Load Suppression

The SRM's CC (Contact Closure) input circuit includes an internal snubbing diode across it's relay coil which means there is no need for any external suppression across the input terminals.

The SRM does not provide any surge suppression across its relay contacts. When the instrument relays are used to switch an inductive load such as an external relay coil, contactor, solenoid inductive load, large voltage spikes may be created in nearby cable harnesses. When excessive, these voltage spikes can disrupt the operation of all nearby electronics including this product. Inductive loads should have suppression devices installed at the load (for external relays this would be right across the relay coil itself). Usually this is a simple diode for dc circuits. AC circuits routinely use an R-C snubber. Please follow the external load manufacturer instructions for their recommended suppression kits.

Caution: *If suppression devices are not installed on inductive loads, the SRM unit may be damaged. This damage could include blowing of replaceable fuses on the relay outputs (see Maintenance section for fuse replacement).*

Please contact Moore Industries' Customer Service for further technical assistance.

CE Certification-related Guidelines

Installation of any Moore Industries' products that carry the CE marking must adhere to the guidelines in the Recommended Ground Wiring Practices section in order to meet the EN 61326 requirements set forth in the applicable EMC directive.

The Low Voltage Directive also applies to the SRM when connecting any of its output relay contacts to voltages greater than 50 vac. In order to comply with EN61010-1 (Low Voltage Directive) all guidelines in this section must be followed.

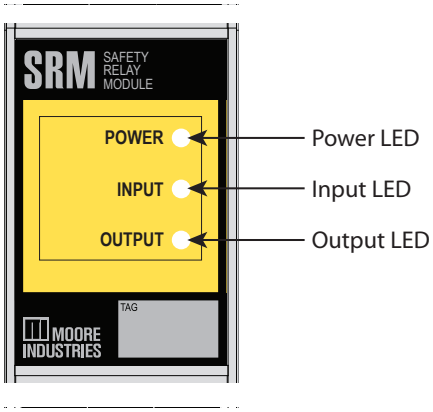
Section 4 - Operation and Maintenance

When the SRM is used in a SIL rated safety application, please refer to the Safety Instrumented Systems section of this manual before operating your unit.

Operation

Once installed, and supplied with the correct power, the SRM begins to operate immediately. Depending upon environmental conditions, it can be expected to operate unattended for extended periods of time.

Figure 4.1. *SRM Front Panel LEDs*



Visual Diagnostics

The SRM incorporates three (3) LEDs which indicate Input, Output, and Power status. The Input and Output LEDs provide a visual diagnostic for the SRM. Both LED colors should always match unless there is a relay failure such as stuck contacts. The Power LED will be green when appropriate power is supplied to SRM.

- **Input LED** – When the SRM Input is open, the Input LED will be red. When the SRM Input is closed, the relay becomes energized and the Input LED will turn green.
- **Output LED** – When the Normally Open terminals are closed and the Monitor terminal is open, the Output LED will be green. When the Normally Open terminals are open and the Monitor terminal is closed, the Output LED will be red.
- **Power LED** – The Power LED will be green when appropriate power is supplied to SRM. If there is power applied to the unit and the power led is off, the power fuse may be blown and need to be replaced (see Maintenance section).

If both input and output LEDs are correct but any of the outputs are stuck open, the fuse on the stuck output may be blown and need to be replaced (see Maintenance section).

Note: *Applications that require wiring the SRM's CC input to a "wet" contact (24Vdc) instead of voltage free Contact Closure (see Applications Figure 5.3) will either show all green LEDs when the contact/relay output is closed or all LEDs will be off (dark) when the contact/relay output is open. If there are any red LEDs displayed then this indicates a relay failure or blown fuse.*

Maintenance

Moore Industries suggests a quick check for terminal tightness and general unit condition every year. Always adhere to any site requirements for programmed maintenance.

Fuse Replacement

Input power and all output terminals are fuse protected. If maximum voltage or currents are exceeded on the input or output terminals, one or more fuses may blow and will need to be replaced.. If fuse replacement is required, disconnect all terminals from the unit, remove left side panel as viewed from the front and refer to Figure 5 below for fuse locations.

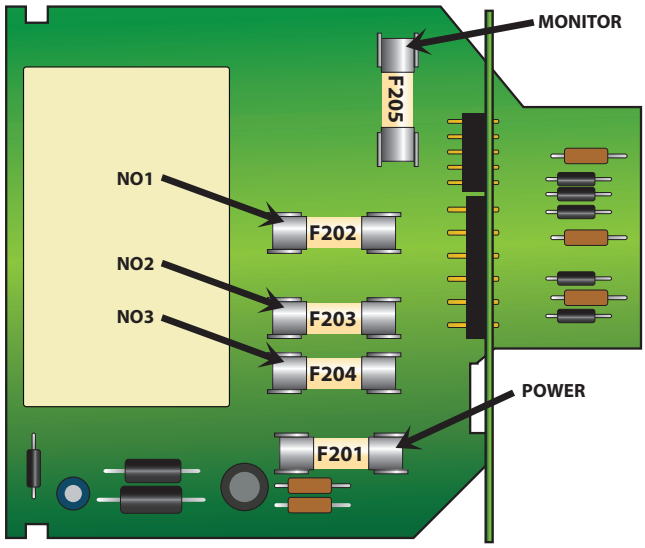
All fuses are 5mm x 20mm 250VAC Slow Blow with the following current rating:

- **F201 (0.5A)-** for Power Fuse
  (Moore Industries Part Number: 800-855-16)

- **F202-F204 (5.0A)**- for Normally Open Process relays
  (Moore Industries Part Number: 800-857-16)

- **F205 (1.0A)**- for Normally closed Monitor relay
  (Moore Industries Part Number: 800-856-16)

Figure 4.2. *Fuse Locations*



Caution: *Replacement fuses must be exactly the same size, type, voltage and current rating as specified here. Any deviations could create a safety hazard. Replace fuses with caution, pushing down excessively can result in damage to unit.*

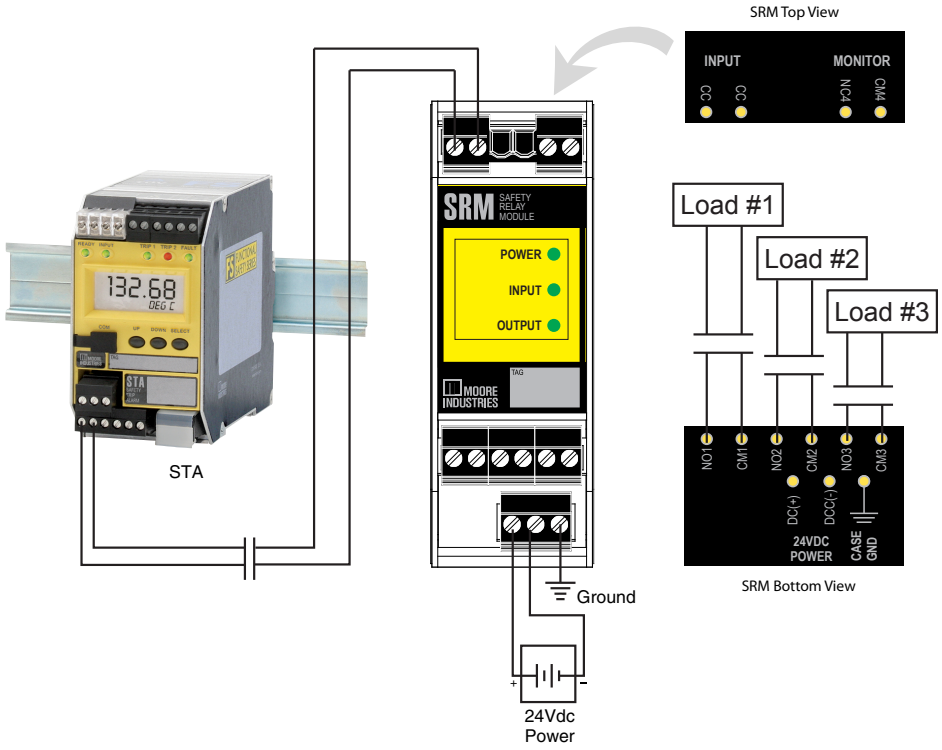
Section 5 - Applications

This section provides some examples of typical applications for the SRM.

Typical SIL 1 or SIL 2 Application

The SRM used in a standard SIL 1 or SIL 2 application with up to three outputs.

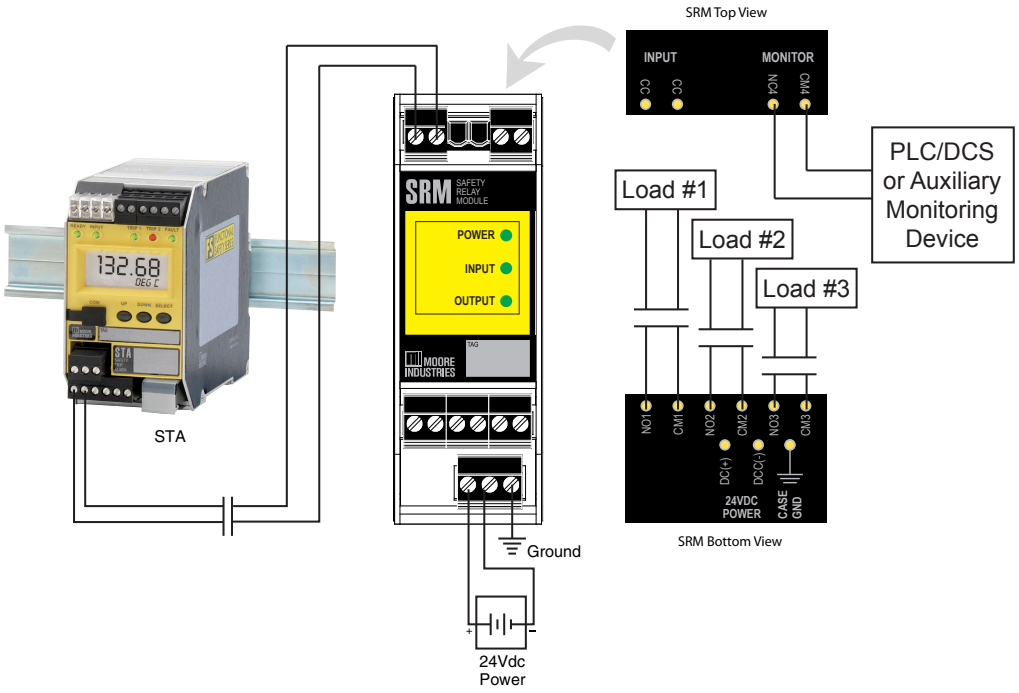
Figure 5.1. *SRM in SIL 1 and SIL 2 applications*



SIL 1 or SIL 2 Application using Monitor Output

The Monitor and Input contacts of the SRM may be connected to a PLC, DCS or other monitoring device for diagnostic purposes.

Figure 5.2. *SRM in SIL 1 and SIL 2 applications using Monitor output.*



SIL 1 or SIL 2 Application when used with "wet" Relay/Contact Outputs

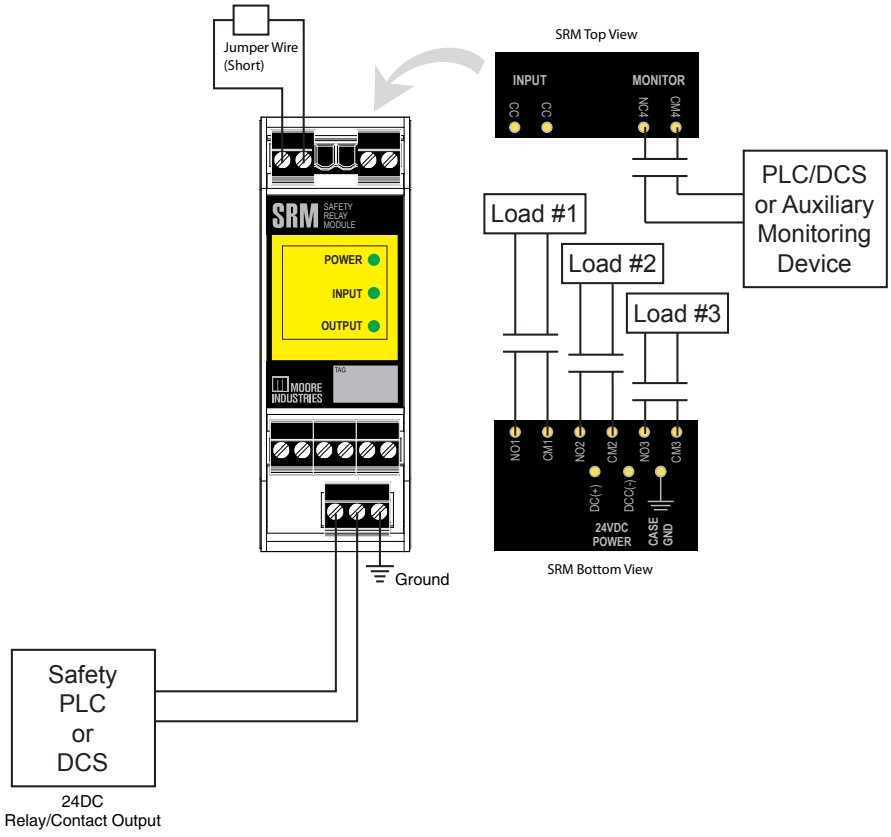
The Contact Closure (CC) input of the SRM is designed to accept a dry or volt free contact. Applications that require hooking up the SRM to an output that includes a "wet" or voltage (usually 24Vdc) contact output are shown in Figure 5.3.

In this instance the source relay output is used to apply power to the SRM rather than being applied to the input of the SRM. By shorting the CC input terminals of the SRM, the outputs of the SRM will be energized when the source relay output applies voltage to the SRM's power terminals. When the source relay output circuit opens, the SRM will be turned off and the output relays will become de-energized.

In this application, the LEDs will be green when 24Vdc is applied and all LEDs will be dark when 0Vdc is applied. .

***Note**: Output Relay signal source must be capable of providing and handling a load of 24Vdc +/- 5% at 100mA.*

***Figure 5.3.** SRM in SIL 1 and SIL 2 applications when used with "wet" contact (24Vdc) outputs*



Section 6 - SRM in Safety Instrumented Systems

The SRM is designed for use as an element of the safety instrumented system as defined by IEC 61508-4 paragraph 3.4.1.

This user manual contains all of the information needed to install, operate and maintain this product. For safety applications the SRM must only be used in accordance with this information and the restrictions and limitations as detailed below.

Functional Safety Description

The SRM has been certified, by exida ® to IEC61508:2010 for systematic and random integrity up to SIL2. This means that an SRM is approved for single use in Safety Instrumented Systems (SIS) up to SIL2.

Failure Rate Data

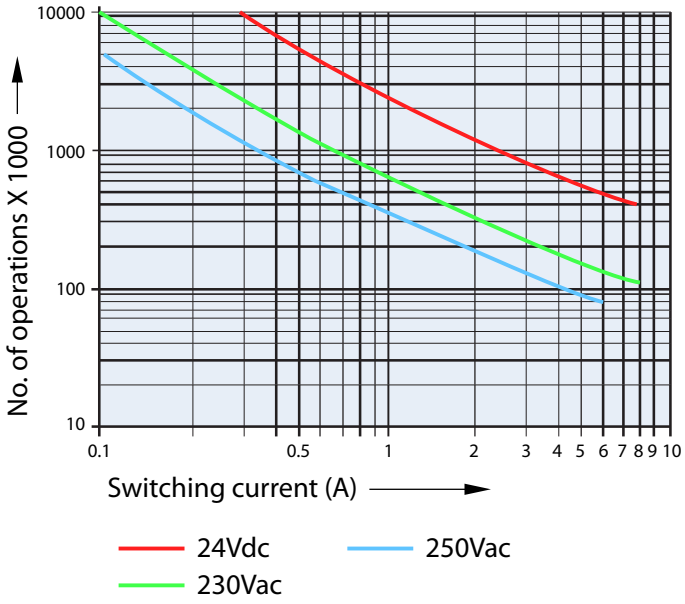
The SRM FMEDA report (Moore Industries' Document No: 700-702-35) provides the failure data (including PFD and SFF) required for calculations to use the SRM as part of a Safety Instrumented System.

Product life

The product life of the SRM primarily depends on contact life or number of operations. Figure 6.1 shows a graphical representation of number of operations versus switching current.

Contact life

Figure 6.1. *SRM Contact Life Chart*



Installation

No special installation is required in addition to the standard installation practices in this user manual. Refer to the specification table of this user manual for ambient conditions and required power input.

Configuration

The SRM is a passive unit that requires no user configuration. For SIL 1 and SIL 2 applications, it can be connected directly to a Safety Logic Solver such as the STA from Moore Industries.

For diagnostic purposes, the monitor relay and input signal may also be connected to a third-party system (See Applications section for examples).

Visual Diagnostics

The SRM incorporates two (2) LED which indicate Input and Output status.

- **Power LED** – The Power LED is green when the appropriate input power is applied to the SRM. An extinguished Power LED may indicate that the power fuse has been blown and needs replacing, the power input is less than the appropriate amount or that no power is currently applied to the unit.
- **Input LED** – When the SRM Input is open, the Input LED will be red. When the SRM Input is closed, the relay becomes energized and the Input LED will turn green.
- **Output LED** – When the SRM Input is open, the Output LED will be red. When the SRM Input is closed, the relay becomes energized and the Output LED will turn green.

The Input and Output LEDs provide a visual diagnostic for the SRM. Both LED colors should always match unless there is a relay failure such as stuck contacts.

***Note**: Applications that require wiring the SRM's CC input to a "wet" relay output (24Vdc) instead of voltage free Contact Closure (see Applications Figure 5.3) will either show all green LEDs when the contact/relay output is closed or all LEDs will be off (dark) when the contact/relay output is open. If there are any red LEDs displayed then this indicates a relay failure or blown fuse.*

Process Safety Time

Process safety time is the minimum time from the initiation of a hazardous event to the point where the hazardous event is unavoidable. Any safety function designed to either prevent the event or at least mitigate its effect must be capable of performing its specified safety function in a time period very much less than the process safety time.

The SRM has a characteristic response time (end-to-end) of <50mSec.

Proof Test Procedure

It is normal practice with SIS that the components undergo periodic proof tests to expose dangerous faults that are not detected by internal diagnostic tests. Thus, this section specifies how the dangerous undetected faults determined during the FMEDA can be detected during proof testing.

Calculation of the required proof test interval can be made using data in the FMEDA report (Moore Industries' Document No: 700-702-35).

A proof test interval of 21 months is recommended for a single SRM used in a typical SIL 2 low demand application (PFD_{AVG} budget for the SRM is assumed to be 5% of the total PFD_{AVG} allocation of the safety function).

The proof tests described in Table 6.1 cover all possible dangerous undetected faults. Periodically testing the SRM, using the proof test steps outlined below, the accumulated PDF_{AVG} value can be reduced to zero.

Repair and Replacement

The SRM has replaceable fuses (see Maintenance section). After replacing any fuses, it is recommended to run the proof test procedure before returning the unit back to service. Except for the fuses, the SRM is not intended to be repaired on site and has no components needing maintenance or regular replacement. On device failure, the SRM should be returned to Moore Industries World Headquarters in North Hills, CA U.S.A. for repair and refurbishment (refer to Returns Procedures at the end of this manual).

Warning: *Replacement fuses must be exactly the same size, type, voltage and current rating as specified in the Maintenance section. Any deviations could create a safety hazard and will invalidate any remaining warranty.*

With the exception of fuses, repair or replacement of any component without authorization from Moore Industries will invalidate any remaining warranty.

Recording and Reporting of SRM Performance

It is the end user's responsibility to maintain records of all safety components failures, especially those that might be classified as potentially dangerous.

This feedback data not only helps the supplier identify and rectify reliability issues but also to provide quantitative data to increase confidence in the FMEDA analysis of dangerous failure rates. Please ensure that any components returned to Moore Industries are returned with a clear report identifying the fault experienced.

Table 6.1. *SRM Proof Test Steps*

Step	Action
1	Bypass the safety logic solver or take other appropriate action to avoid a false trip.
2	Disconnect all wires from SRM. Using an ohmmeter, measure the resistance between the case and all exposed pins on the front panel. Verify that the measured resistance is greater than 1MΩ with the exception of the CASE GND pin which should have 0Ω resistance.
	Note: This test for shorts between the power, input and output to the case and verifies that ground is connected to case..
3	Supply 24Vdc power to SRM
4	Install one (1) 2k ohm (1/2W) resistor to each Common (CM) terminal. Connect remaining end of resistors to 24Vdc +/-5% . Finally connect each remaining terminal (NC or NO) to 24Vdc Return.
	Note: This circuit will pass 12mA through each relay contact.
5	Using voltmeter, measure voltage across each of the three (3) normally open terminals and verify that the measured voltage is between 22.8 and 25.2Vdc.
6	Using voltmeter, measure voltage across the normally closed terminal and verify that the measured voltage is less than 0.1V.
7	Apply a short across the CC Input Terminal.
8	Using voltmeter, measure voltage across each of the three (3) normally open terminals and verify that the measured voltage is less than 0.1V.
9	Using voltmeter, measure voltage across normally closed terminal and verify that the measured voltage is between 22.8 and 25.2Vdc.
10	Switch off or disconnect power to SRM.
11	Using voltmeter, measure voltage across each of the three (3) normally open terminals and verify that the measured voltage is between 22.8 and 25.2Vdc.
12	Using voltmeter, measure voltage across the normally closed terminal and verify that the measured voltage is less than 0.1V.
	Note: Step 9-11 verifies SRM will fail safe.
13	Reconnect SRM to original connection.
14	Remove the bypass from the safety logic solver or otherwise restore normal operaton.

Section 7 - Specifications

Performance	**Power Consumption:** 1.5W, typical; 2.3W Max **Response Time:** 20ms typical, 50ms Max. **Isolation:** 1500Vrms between; power and Input to each output, power and input to case, case to output **Power:** 24Vdc -5% to +10%
Input Type	**Contact Closure:** (CC) 24Voc, Isc 55mA, Includes diode suppression of relay coil
Output Type	**Three (3) fuse protected Normally Open Terminals:** 250Vac/30Vdc 5A(resistive) for user application **One (1) fuse protected Normally Closed Terminal:** 250Vac/30Vdc 1A (resistive) for diagnostics
Ambient Conditions	**Operating Range:** -20°C to +70°C (-4°F to +158°F) **Relative Humidity:** 0-95% non-condensing **RF Standards:** Meets IEC61326-1 and IEC61326-3 (Functional Safety) **RFI/EMI Protection:** RF immunity at 20V/m, 20-1000MHz, when tested to IEC61000-4-3
Indicators	**Power:** Green (ON) when the appropriate power is applied. **Input:** Green when CC Terminal closed; Red when CC Terminals are open. **Output:** Green when the Normally Open terminals are closed and the Monitor terminal is open; Red when the Normally Open terminals are open and the Monitor terminal is closed.
Weight	328.9g (11.6oz)

Specifications and Information subject to change without notice.

SECTION 8

Section 8- Ordering Information

The SRM ordering information is detailed below.

Unit	Input	Output	Power	Options	Housing
SRM Safety Relay Module	**CC** Contact Closure	**3RO** Three (3) Relay Outputs	**24DC**	None	**DIN** Universal DIN-style housing mounts on 32mm (EN50035) G-type and 35mm (EN50022) Top Hat DIN-rails

When ordering, specify: Unit / Input / Output / Power / Options [Housing]
Model number example: SRM / CC / 3RO / 24DC [DIN]

Accessories

Part Number	
700-702-35	**FMEDA Report** consistent with IEC 61508-2:2002 providing the information necessary to design a Safety Instrumented System (One copy provided free with each order Upon Request).

Section 9 - Declarations of Conformity

MOORE INDUSTRIES WORLDWIDE

EC Declaration of Conformity

Moore Industries-International, Inc.
16650 Schoenborn Street
North Hills, CA 91343-6196 U.S.A.

Date Issued: 26 Aug. 2014
No. 100-100-218 Rev. D
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Equipment Description:

Safety Relay Module
Model SRM / * / * / * / * / *
* Indicates any input, output, power, options and housing as stated in the product data sheet.

Directive:

2004/108/EC (EMC)

Specifications Conformed To:

EN 61326-1:2006 Electrical equipment for measurement, control and laboratory use - EMC requirements

Directive:

2006/95/EC (LVD: Electrical Safety Low Voltage Directive)

Specifications Conformed To:

EN 61010-1:2010
(IEC 61010-1:2010, 3rd Ed.)

Electrical Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements

On Behalf of Moore Industries-International, Inc., I declare that, on the date the equipment accompanied by this declaration is placed on the market, the equipment conforms with all technical and regulatory requirements of the above listed directives.

Signature:

Deanna Esterwold, Quality Manager

Warranty Disclaimer

Moore Industries ("The Company") makes no express, implied or statutory warranties (including any warranty of merchantability or of fitness for a particular purpose) with respect to any goods or services sold by the company. The company disclaims all warranties arising from any course of dealing or trade usage, and any buyer of goods or services from the company acknowledges that there are no warranties implied by custom or usage in the trade of the buyer and of the company, and that any prior dealings of the buyer with the company do not imply that the company warrants the goods or services in any way.

Any buyer of goods or services from the company agrees with the company that the sole and exclusive remedies for breach of any warranty concerning the goods or services shall be for the company, at its option, to repair or replace the goods or services or refund the purchase price. The company shall in no event be liable for any consequential or incidental damages even if the company fails in any attempt to remedy defects in the goods or services , but in such case the buyer shall be entitled to no more than a refund of all monies paid to the company by the buyer for purchase of the goods or services.

Any cause of action for breach of any warranty by the company shall be barred unless the company receives from the buyer a written notice of the alleged defect or breach within ten days from the earliest date on which the buyer could reasonably have discovered the alleged defect or breach, and no action for the breach of any warranty shall be commenced by the buyer any later than twelve months from the earliest date on which the buyer could reasonably have discovered the alleged defect or breach.

Return Policy

For a period of thirty-six (36) months from the date of shipment, and under normal conditions of use and service, Moore Industries ("The Company") will at its option replace, repair or refund the purchase price for any of its manufactured products found, upon return to the Company (transportation charges prepaid and otherwise in accordance with the return procedures established by The Company), to be defective in material or workmanship. This policy extends to the original Buyer only and not to Buyer's customers or the users of Buyer's products, unless Buyer is an engineering contractor in which case the policy shall extend to Buyer's immediate customer only. This policy shall not apply if the product has been subject to alteration, misuse, accident, neglect or improper application, installation, or operation. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

To return equipment to Moore Industries for repair, follow these four steps:

1. Call Moore Industries and request a Returned Material Authorization (RMA) number.

   Warranty Repair –

   If you are unsure if your unit is still under warranty, we can use the unit's serial number to verify the warranty status for you over the phone. Be sure to include the RMA number on all documentation.

   Non-Warranty Repair –

   If your unit is out of warranty, be prepared to give us a Purchase Order number when you call. In most cases, we will be able to quote you the repair costs at that time. The repair price you are quoted will be a "Not To Exceed" price, which means that the actual repair costs may be less than the quote. Be sure to include the RMA number on all documentation.

2. Provide us with the following documentation:

   a) A note listing the symptoms that indicate the unit needs repair

   b) Complete shipping information for return of the equipment after repair

   c) The name and phone number of the person to contact if questions arise at the factory

3. Use sufficient packing material and carefully pack the equipment in a sturdy shipping container.

4. Ship the equipment to the Moore Industries location nearest you.

The returned equipment will be inspected and tested at the factory. A Moore Industries representative will contact the person designated on your documentation if more information is needed. The repaired equipment, or its replacement, will be returned to you in accordance with the shipping instructions furnished in your documentation.

MOORE INDUSTRIES

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